Partnership Opportunity Document (POD)

For

NASA Goddard Space Flight Center (GSFC)

Planetary Space Flight Instrument Electronics Development

June 4, 2014

General Information

Procurement supplied

Contracting Office Address

NASA/Goddard Space Flight Center, Code 210.8, Greenbelt, MD 20771

1.0 Introduction and Scope

This partnership opportunity is for multiple NASA Planetary Mission Opportunities in 2014. NASA/GSFC is seeking partners for spaceflight instrument development for potential proposals to these opportunities.

GSFC mission teams will be submitting proposals that will include Discovery and Europa Instrument announcements currently scheduled for release in 2014. Both of these opportunities will be two-step processes, with the first proposal response being primarily focused on the scientific merit and technical feasibility of the proposed mission and its associated scientific investigation. The initial submissions will then be down-selected after formal peer review and the resultant subset of proposals will be funded to perform Phase A mission concept studies. During Phase A, proposals will be expanded and refined to detail the entire end-to-end life cycle concept, with greater attention to engineering implementation, cost, and schedule.

Information on the Discovery AO can be found in the Community Announcement Regarding Discovery Program Draft Announcement of Opportunity (http://nspires.nasaprs.com/external/viewrepositorydocument/cmdocumentid=398476/solicitationId=%7B0CA4625F-7B23-C1F5-9FC5-E695B3F0A50D%7D/viewSolicitationDocument=1/Discovery%20Community%20Announcement.pdf) The time frame for the solicitation is intended to be:

Release of draft AO.....May 2014(target)
Release of final AO.....September 2014(target)
Preproposal conference.....~3 weeks after final AO release
Proposals due.....90 days after AO release
Selection for competitive Phase A studies...May 2015(target)
Concept study reports due.....April 2016(target)
Down-selection.....October 2016(target)
Launch readiness date.....NLT December 31, 2021

Information on the Europa Instrument Program Element Appendix (PEA) of the Stand Alone Missions of Opportunity Notice (SALMON-2) can be found in the Upcoming Europa Missions Announcement (https://www.fbo.gov/index?s=opportunity&mode=form&id=e713baa8075be75054d20f25693a4ecd&tab=core&_cview=0). The time frame for the solicitation is intended to be:

Release of PEA Community Announcement … Late April 2014 (target)
Release of final PEA ..... July 2014 (target)
PEA Preproposal conference ..... ~3 weeks after final PEA release
PEA Proposals due ..... 90 days after PEA release
Selection for competitive Phase A studies ….. April 2015 (target)
Concept study reports due ..... December 2015 (target)
Down-selection ..... April 2016 (target)

This partnership opportunity is being issued to interested and qualified teaming partners to help prepare the NASA/GSFC concepts for proposal submittal and to provide a flight qualified instrument subsystem should the instrument be selected for flight. The flight system GSFC is interested in finding partners for is a high-reliability, low cost, compact electronics package for interplanetary missions.

For this partnership opportunity dealing with the preparation of the initial submission, there will be no exchange of funds between the teaming partners. Funding will be available for Phase A and subsequent phases should the investigation be approved to continue through the mission-defined gates for flight. NASA/GSFC reserves the option to not select any teaming partners under this POD offering on the basis of materials received.

2.0 Overview

The flight subsystem GSFC is interested in finding partners for is up to 5 separate spaceflight electronics packages, potentially including low- and high-voltage DC and RF power supplies, analytical instrument micro-controllers, valve, heater, and temperature sensor controllers, harnessing, and associated EGSE (e.g., instrument simulators) to integrate with and service a spaceflight science instrument being developed for the mission opportunities described above. Up to five spaceflight electronics packages may be proposed. Additional information and detailed requirements will be available to Notice of Interest respondents (see 6.0).

3.0 Pre-selection Support

3.1 Initial Proposal Support

SOW: It is expected that the selected respondent will provide support using their own resources to help develop and write the proposal in response to the opportunities in the area of the electronics, harnessing and associated EGSE. This will involve meeting with the scientists and the overall instrument engineering team: to help define the end-to-end performance requirements, including interfaces to the various subsystems and the spacecraft; to define the flight instrument electronic architecture; to identify study topics; and to predict performance. This will include cost estimation for all development phases. The period of performance for this interval is the timeframes shown above from POD selection to initial proposal submission.

3.2 Phase A Study and Phase A Proposal Support

SOW: If the instruments are selected for Phase A studies, the proposal team will receive funding to conduct a Phase A study and submit a detailed Concept Study Report (CSR) to NASA. The respondent providing the electronics system will be allocated a portion of this funding to perform trade studies as identified in the initial proposal. The respondent will also be expected to contribute to designing, documenting, and costing the electronics system design, fabrication, integration and testing for inclusion in the final Concept Study Report. The period of performance for this interval is detailed in the above timelines.

3.3 POD Response Instructions for Pre-Selection Support

The respondent shall:

1) Demonstrate understanding and extensive experience in the design, fabrication, integration and testing of spaceflight electronic systems (including harnessing and associated EGSE) for spaceflight instruments for interplanetary science applications. Highlight particularly critical or challenging areas for the design of the electronics system, harnessing approach, or EGSE. The respondent shall:
    - Provide a technical summary/description of the proposed hardware including relevant heritage,
    - Explain what types of capabilities and requirements cost savings the electronics provide for the intended target instrument(s).

2) Identify available design and modeling capabilities required to support development of the instrument electronics, harnessing and associated EGSE and what level of experience in similar spaceflight electronics, harnessing and associated EGSE relevant personnel possess.

3) Provide any recommended potential study topics related to the electronics development.

4) Indicate what level of resources would be allocated to the proposal phase of support.
    - Discuss skills that will be provided and ideas the level of conceptual design and important analysis and trade studies that will be needed to develop the system.

5) Identify the pertinent instruments for which they have provided support for proposal writing in the area of space flight electronics design, fabrication, integration and testing:
    - Provide data on scope of the electronics design, the role that they played in the proposal process, and the portions of the proposal they have written or provided assistance in writing and provide a customer reference POC.
    - Describe how this proposal role mapped to their role in the end instrument and if the scope changed explain why.

4.0 Development Support

SOW: At the end of Phase A another down-select occurs. If the mission is selected for development and launch, the respondent will be responsible for the design, development, and test of the proposed electronics system. The respondent is responsible for: identifying electronics system requirements and providing all aspects of the system (either directly, through purchasing or teaming arrangements). The period of performance for this interval is expected to last approximately 46-66 months. The date will depend upon selection timelines and budget allocations.

POD Response Instructions for Development Support

The respondent shall:

1) Describe your team's experience in similar spaceflight systems applications.

2) Identify available design and modeling capabilities required to support development of the electronics system.

3) Identify fabrication and testing facilities that will be required to support development and test of the electronics system.

4) Identify which missions they have successfully supported in this capacity and provide a customer reference POC.
   - Provide information on recent similar electronics systems designed and delivered, and how that experience is applicable to the mission. Basic information on scope of work, and how well the fielded electronics system met the requirements (cost and technical, and how well they met the proposed schedules).

5) Provide a very Rough Order of Magnitude (ROM) cost estimate and timeline for the scope of the design, fabrication, and testing of the electronics, harnessing and associated EGSE. This ROM will not be considered a binding commitment, but will serve as a consideration during the partnership evaluation. Cost of the electronics, harnessing and associated EGSE will be an important consideration. The respondent should comment on the reasonableness of the placeholder cost and provide historic justification for the ROM.

6) List ideas and methods of keeping costs low and the risk of cost growth low, including how they would utilize heritage designs and components or existing open market hardware to minimize costs and provide a more robust system. Identify cost savings or efficiencies of designing, fabricating, testing similar electronic systems that may be common to all instruments.

7) Identify which missions they have successfully supported in this capacity and provide a customer reference POC.

8) Provide information on recent similar electronics, harnessing and associated EGSE designed and delivered, and how that experience is applicable to the targeted instrument. Basic information on scope of work, and how well the fielded electronics, harnessing and associated EGSE met the requirements (cost and technical) as well as how well they met the proposed schedules.

5.0 Additional Information

The respondent may provide any additional information on any other pertinent electronics, harnessing and associated EGSE for which his/her establishment and any partners/vendors have provided electronics, harnessing and associated EGSE, and identify the relevant details of similar systems. Also, identify any other ideas and related activities, which your organization is or has been involved with, and the significance of that activity to the target instrument(s) you are responding to.

6.0 General Instructions for POD Response

Potential respondents are asked to contact the GSFC Point of Contact as soon as possible after release of this document with a **Notice Of Interest** (intentionally not called notice of intent). This contact does not create an obligation to respond to the POD, but allows GSFC to disseminate more details on the parameters of the electronics system being considered and provide answers to questions from potential partners. **All Notice of Interest respondents will receive further details on the missions that will facilitate a focused response.** These details are competition sensitive and not to be shared outside the teams necessary to prepare a full response. All questions and answers will be sent to those who responded to the Notice of Interest, while the source of the questions shall be held confidential. Questions and answers that contain information unique to a respondent's proprietary approach will not be shared if they are identified as such. The answers provided to all qualified Notice Of Interest responders are vital to focused responses. Questions can be sent to the contact listed below via email. For purposes of this partnership opportunity, the contact is Michael Adams, Michael.L.Adams@nasa.gov, 301.286.2010.

Responses to the Partnership Opportunity Document [POD] shall:

1) Be in a presentation format (viewgraphs) that shall not exceed 30 pages. The font size for the text shall be no smaller than 12 point.

2) Be specific about the electronics, harnessing and associated EGSE the response is for.

3) Address all requirements noted in sections 3.0 through 7.0 of this document.

Responses will be treated as proprietary information and controlled as such.

The respondents shall deliver the requested information in presentation format. Final presentation packages must be received by 1600 EDT, June 20, 2014. Presentations are to be delivered electronically to Michael Adams at the above listed email address.

7.0 Selection Criteria for Awarding Partnership Opportunity

Selection criteria will be consistent with the desire to encourage cost effective partnerships between the Government and Industry. The information requested in Section 7.0 will allow the evaluators to determine how well the respondents systems are appropriate to the specific opportunities.

Selection Criteria

Proposal/Pre-selection Support (30 points)

- Experience (and Team skills) and past performance in proposal phases
- Resource commitment
- Identification and description of key critical areas
- Understanding and addressing general requirements and needs for the proposed system on the targeted instrument(s) for which it is intended. While requirements are not listed explicitly in this POD, provide a discussion of the assumptions made and capabilities. Clarify what specific operations, reliability and environmental requirements exist for each target instrument. Recommend design studies.

Development Support (70 points)

- Reasonableness of cost and schedule estimates. Reasonable approaches to saving costs or schedule efficiencies by co-developing multiple flight electronic systems will be highly considered
- Experience and past performance in development phases
- Experience and heritage with respect to similar space flight hardware. Experience developing and implementing similar space flight hardware is a minimum requirement
- Completeness of identification of system functions by instrument development phase
- Cost control measures
- Reasonableness of design and modeling capabilities to support the effort
- Reasonableness of fabrication and testing facilities to support the effort
- Mass of the proposed system (electronics and harnessing)
- Power efficiency of the proposed system (electronics) including thermal management design
- Efficiency of communications approach (commands and data handling)
- Ability of system to meet or simplify other instrument requirements or challenges the respondent identifies

8.0 Acronyms List

AO	Announcement of Opportunity
CSR	Concept Study Report
EGSE	Electrical Ground Support Equipment
EDT	Eastern Daylight Time

GSFC	Goddard Space Flight Center
PEA	Program Element Appendix
POC	Point of Contact
POD	Partnership Opportunity Document
ROM	Rough Order of Magnitude
SALMON-2	Stand Alone Missions Of Opportunity Notice
SOW	Statement Of Work